

GARVIES POINT REDEVELOPMENT PROJECT GLEN COVE, NEW YORK

DREDGE SPOIL CHARACTERIZATION PLAN

SUBMITTED TO:



New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau A, Section C
625 Broadway
Albany, New York 12233

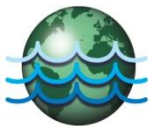


United States Environmental Protection Agency
Region 2
290 Broadway, 20th Floor
New York, New York 10007

PREPARED FOR:

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PWGC Project Number: RGI1508

OCTOBER 8, 2015

P.W. GROSSER CONSULTING INC.
PROJECT No. RGI1508

DREDGE SPOIL CHARACTERIZATION PLAN

GARVIES POINT ROAD REDEVELOPMENT
GELN COVE, NEW YORK

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ACRONYM

ACRONYM	DEFINITION
CFR	Code of Federal Regulation
D&B	Dvirka and Bartilucci Consulting Engineers
ELAP	Environmental Laboratory Approval Program
FSS	Final Status Survey
HWRL	Hazardous Waste Regulatory Level
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
NAPL	Non-Aqueous Phase Liquid
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OUIV	Operable Unit IV
PCB	Polychlorinated Biphenyl
PID	Photo-Ionization Detector
ppm	Parts Per Million
PWGC	P.W. Grosser Consulting, Inc.
QA/QC	Quality Assurance / Quality Control
ROD	Record of Decision
RRUSCO	Restricted-Residential Use Soil Cleanup Objective
SEC	Safety and Ecology Corporation
SVOC	Semi-Volatile Organic Compound
SWCL	Site-Wide Cleanup Level
TCLP	Toxicity Characteristic Leaching Procedure
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound

1.0 INTRODUCTION

P.W. Grosser Consulting, Inc. (PWGC) has prepared the following Dredge Spoils Characterization Plan to outline procedures and a scope of work intended to further characterize the dredge spoil stockpile located on the former Li Tungsten Parcel A for reuse onsite.

1.1 Project Background

The United States Army Corps of Engineers (USACE) initiated dredging of the Glen Cove Creek in September of 2000 as part of routine operations for the navigational waterway. At this time, only the western end of the creek was dredged as petroleum-contaminated soils in the eastern end caused dredging to cease. Approximately 24,000 CY of spoils were dewatered on the (then) recently-remediated Li Tungsten Parcel A building slab. Radioactive slag nodules were found in the spoils that required a remedial action before the spoils could be removed by the City to the North Hempstead Landfill. The remediation was performed by methodically spreading and instrument-screening batches of dewatered sediments, followed by manual removal of any materials exhibiting radiation greater than the specified criteria. Afterwards, the City of Glen Cove disposed of the remaining non-radioactive sediment at the North Hempstead Landfill. The remedy was completed summer 2002. The remaining dredging of the creek could not be completed until a Record of Decision (ROD) was signed in 2005, and a final remedial design was completed in April 2006. Dredging commenced in October 2006 (U.S. Army Corps of Engineer, Kansas City District, Final Remedial Action Report, Li Tungsten Superfund Site, Operable Unit 4, Glen Cove Creek; October 2007).

As part of the final remedial design, a concrete drainage pad was constructed on Parcel A by connecting existing building slabs and extending the pad to the design limits. Impervious membranes were then placed over the perimeter of the slab. The concrete and membranes were used to separate the spoils from the underlying soil, collect any drainage, and provide an area to spread the spoils in 6-inch thick lifts for screening.

The USEPA screened the spoils for radioactivity, separated the radioactive ore residuals, and placed the ore residuals in the Dickson Building pending disposal. According to the “Remedial Action Report for the 2005 WRA Work Plan Segregation and Management of Dredge Spoils” TDY Industries 2009, a total of one drum of radioactive material was removed from the spoils. It is unclear as to whether the spoils were staged on Parcel A and then segregated or if they were segregated as they were removed from the creek. After the screening, the non-radiological dredge spoils, estimated at 30,000 cubic yards, were stockpiled on Parcel A on the concrete pad constructed under the final remedial design. These are the subject of this characterization plan.

Figure 1 shows the locations of the dredge spoil stockpiles following completion of the 2007 screening project.

1.2 2007 Dredge Spoil Characterization

The dredge spoil stockpiles on the former Li Tungsten Parcel A were characterized in July of 2007 to evaluate the potential reuse of the material at the Brookhaven Landfill by Dvirka & Bartilucci Consulting Engineers (D&B). The characterization sampling included collecting grab and composite samples utilizing a backhoe at a frequency of one per every 2,000 cubic yards (total of fifteen grids) of material and field screening for radiation. Radiological field screening did not identify any radiation in the samples. A total of 15 grab and 15 composite samples were collected from the dredge spoil stockpiles and analyzed for the acceptance criteria for the Brookhaven Landfill which included the following:

- Volatile Organic Compounds (VOCs) by USEPA Method 8260;
- Semi-Volatile Organic Compounds (SVOCs) by USEPA Method 8270;
- Toxicity Characteristic Leaching Procedure (TCLP) Metals and;
- Total Organic Carbon.

PWGC reviewed the characterization data and compared it to the Site-Wide Cleanup Levels (SWCLs) established for the Li Tungsten Federal Superfund site. In the absence of SWCLs, the Restricted-Residential Use Soil Cleanup Objectives (RRUSCOs) contained within New York State Department of Environmental Conservation's (NYSDEC's) 6 New York Codes, Rules, and Regulations (NYCRR) Part 375 were utilized for comparison. TCLP metals results were compared against the USEPA Hazardous Waste Regulatory Level (HWRL) specified in 40 Code of Federal Regulations (CFR) 261.24.

VOCs were not detected above RRUSCOs.

SVOCs were detected above RRUSCOs in eight of the fifteen composite samples. SVOCs detected in excess of RRUSCOs included Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3-cd)pyrene. It should be noted that these SVOCs were also detected in the surface and subsurface soils throughout Parcel A at similar concentrations as documented in PWGC's Pre-Construction Confirmatory / Insurance Data Gap Subsurface Investigation Report dated May 19, 2014.

TCLP metals results did not exceed HWRLs.

Analytical results are summarized in **Tables 1** through **3**.

These results best represent the initial quality of the dredge spoils as the sampling was performed shortly after

the dredging operations were completed and will serve as a baseline for comparing future characterization data to demonstrate that these dredge spoils have not been impacted by onsite activities since their placement.

Total metals, pesticides, and polychlorinated biphenyls (PCBs) were not evaluated during this study.

1.3 2014 Final Status Survey

In July of 2014, the NYSDEC requested that a Final Status Survey (FSS) be performed for Parcel A in accordance with the multi-agency radiation survey and site investigation manual (MARSSIM). In order to perform the survey, the dredge spoils would need to be relocated and the concrete slab removed so that the underlying soil could be accessed. A plan was developed by Safety and Ecology Corporation (SEC) that detailed how the dredge spoil stockpiles would be maneuvered around the site. The ultimate goal of the plan was to consolidate the stockpiles into a single stockpile located in the center of Parcel A.

1.3.1 Dredge Spoil Movement

The dredge spoils were placed around the perimeter of the drainage pad on Parcel A so the drainage would move into the central portion where it was collected and removed. The FSS process began in this area by conducting a surface scan of the concrete slab prior to its demolition; then removing the concrete slab, scanning the exposed soil for radioactivity, and sampling the residual soil. After this was done the dredge spoils were moved to the central portion of Parcel A under the oversight of SEC and PWGC.

Dredge spoils were originally stored on the concrete slab on Parcel A which helped reduce potential comingling with the surface soil. When they were relocated to the central portion after the FSS was done, a membrane was not placed between the surface soils and dredge spoils, so there may be minor comingling at the interface. The remainder of the dredge spoils were transported directly from the concrete slab to the stockpile which reduced the potential for surface soils to be mixed in.

During the removal of the concrete slab in the central portion of Parcel A, non-aqueous phase liquid (NAPL) and underground storage tanks (USTs) were identified at several locations. Remedial actions were undertaken to remove gross contamination and close the USTs which resulted in three large excavation areas that required backfill for site stabilization.

1.3.2 Dredge Spoil Characterization & Reuse

On October 1, 2014, the NYSDEC was asked to permit the reuse of dredge spoils as backfill in the areas where gross contamination was removed. Approximately 1,000-cubic yards of fill were estimated to be the volume needed to stabilize the pits. In order to determine if the dredge spoils were acceptable for reuse, PWGC collected samples from a portion of the northwestern dredge spoils area, representing 1,000-cubic yards, which had not yet been relocated to the central portion of Parcel A. The location of the dredge spoils and sample locations are shown in **Figure 2**. An excavator was utilized to collect representative soil samples from the stockpile in accordance with Table 4: Recommended Number of Soil Samples for Soil Imported to or Exported from a Site from NYSDEC's *Final Commissioner Policy, CP-51 / Soil Cleanup Guidance*. Samples were screened in the field for the presence of volatile organic vapors with a photo-ionization detector (PID). Volatile organic vapors were not detected in the samples collected. A total of seven grab samples (WC001 through WC007) were analyzed for VOCs (USEPA Method 8260) and two composite samples (WC008 and WC009) for SVOCs (USEPA Method 8270), metals (USEPA Method 6010/7471), pesticides (USEPA Method 8081), and PCBs (USEPA Method 8082). Analytical results were compared against the SWCLs, RRUSCOs, and previous characterization data. Analytical results were below either SWCLs or RRUSCOs and similar in concentrations to the 2007 characterization data for VOCs and SVOCs. Analytical results are summarized in **Tables 1, 2, and 4**, located to the right of the original 2007 data.

This sampling round contained results for the constituents not previously analyzed in 2007: total metals, PCBs, and pesticides, none of which exceeded the standards as mentioned above.

Analytical results were submitted to NYSDEC which approved the stockpile for reuse on October 3, 2014. Approximately 600 yards of the characterized dredge spoils were used as back fill on October 7, 2014 and November 12, 2014. The remaining 400 cubic yards were moved to the central stockpile location.

1.4 Supplemental Dredge Spoil Characterization

After the relocation of the dredge spoils to the central portion of Parcel A, the combined dredge spoil stockpile was sampled on March 25, 2015 to further evaluate soil quality for potential reuse. Samples were screened in the field for the presence of volatile organic vapors with a PID. Volatile organic vapors were not detected in the samples collected. Three grab samples (WC033, WC034, and WC035) whose locations are shown in **Figure 3** were collected from the exterior of the pile and analyzed for VOCs (USEPA Method 8260), SVOCs (USEPA Method 8270), metals (USEPA Method 6010/7471), pesticides (USEPA Method 8081), and PCBs (USEPA

Method 8082). Analytical results, compared against SWCLs, RRUSCOs, and the 2007 and 2014 characterization data, were below SWCLs and RRUSCOs with the exception of several SVOCs in two of the three samples and one metal (cadmium) in each of the three samples. Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, and Indeno(1,2,3-cd)pyrene were detected slightly above the RRUSCO values. Cadmium was detected slightly above the RRUSCO value. The concentrations of SVOCs were similar to that previously detected in 2007 and 2014. Total metals were not originally tested for in 2007. Based upon the 2014 and 2015 characterization data, metals were below RRUSCOs with the exception of cadmium which was detected slightly in excess of RRUSCOs. Analytical results are summarized in **Tables 1, 2, and 4**, located to the right of the 2014 data.

1.5 Dredge Spoil Survey

After the relocation of the dredge spoils to the central portion of Parcel A, a flyover survey was conducted to mark out the current location of the stockpile and estimate the overall volume of the stockpile. The survey estimated the stockpile at approximately 29,100-cubic yards which is comparable to the 31,400-cubic yards of spoils estimated to be removed between 2006 and 2007 less the 600 cubic yards approved by the NYSDEC for reused in 2014. A photo of the current stockpile is shown below.



2.0 OBJECTIVES, SCOPE AND RATIONALE

The primary objectives of the work detailed in this plan will be to collect the data needed to characterize the dredge spoils sufficiently for the NYSDEC and USEPA to determine if it is acceptable for reuse below building slabs, pavement, or two feet of clean cover on the Li Tungsten property during redevelopment. The Scope of Work includes the following tasks:

1. Prepare site access for sampling equipment;
2. Collect and analyze the samples; and
3. Prepare a dredge spoils characterization report.

2.1 Site Preparation

The dredge spoil stockpile is currently located in the central portion of the former Li Tungsten's Parcel A. It is approximately 20 feet high and needs to have an access ramp created and flat areas graded to facilitate collecting samples from the top of the stockpile.

A bulldozer or equivalent will be used to create the access ramp and level the top of the stockpile. Community air monitoring will be performed during soil disturbance activities (see Section 4).

2.2 Dredge Spoil Characterization

The NYSDEC's *Final Commissioner Policy, CP-51 / Soil Cleanup Guidance* has established a recommended number of soil samples for soil imported to or exported from a site, as shown in the following table.

Table 4 Recommended Number of Soil Samples for Soil Import To or Exported From a Site			
Contaminant	VOC	SVOCs, Inorganics & PCBs/Pesticides	
Soil Quantity (CY)	Discrete Samples	Composite	Discrete Samples / Composite
0-50	1	1	3-5 discrete samples from different locations in the fill being provided will comprise a composite sample for analysis
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
> 1000	Add an additional 2 VOC and 1 composite for each additional 1000 CY or consult with DER		

In accordance with the above table, a total of 65 discrete samples for VOCs, and 31 composite samples for SVOCs, metals, pesticides, and PCBs would be recommended for a volume of 30,000-cubic yards.

Historical sampling of the dredge spoil material already included analyzing 25 samples for VOCs, 20 samples for SVOCs, and five samples for metals, pesticides, and PCBs. A breakdown is detailed below:

- 2007 Characterization
 - 15 grab samples for VOCs
 - 15 composite samples for SVOCs
- 2014 Characterization (Characterization of 1,000-cubic yards that followed CP-51 protocol)
 - 7 grab samples for VOCs
 - 2 composite samples for SVOCs, metals, pesticides, and PCBs
- 2015 Characterization
 - 3 grab samples for VOCs
 - 3 composite samples for SVOCs, metals, pesticides, and PCBs

To date the contaminants of concern in the dredge spoils have been documented as mainly SVOCs with low level detections of cadmium in excess of RRUSCOs. VOCs, pesticides, and PCBs have not been detected above SWCLs or RRUSCOs in the previous sampling performed. In addition, field screening has not detected the presence of volatile organic vapors in the dredge spoil samples collected to date.

In order to conform to NYSDEC's *Final Commissioner Policy, CP-51 / Soil Cleanup Guidance*, PWGC proposes to further characterize the dredge spoils at a frequency of one composite and one grab sample per every 1,500-cubic yards. The increased volume from CP-51 (two grab and one composite sample per every 1,000 cubic yards) is appropriate since:

- Data collected in 2014 and 2015 is similar to data collected in 2007 when the pile was first created;
- The sampling performed in October of 2014 followed the CP-51 protocol for the first 1,000-cubic yards and was subsequently approved by the NYSDEC and USEPA for reuse. The proposed modification is based off of the first 1,000-cubic yards already being characterized in accordance with CP-51 procedures.
- A total of 25 samples have been analyzed for VOCs which makes up approximately 40% of the CP-51 recommended number of grab samples. VOCs have not been identified as a contaminant of concern in the spoils to date. Existing data has documented VOC concentrations in the spoils are below RRUSCOs. Field verification during the creation of the stockpile, during characterization, and during relocation has documented the absence of visual and olfactory evidence of VOCs;

- A total of 20 samples have been analyzed for SVOCs which makes up approximately 65% of the CP-51 recommended number of composite samples. Analytical results have shown similar concentrations during each characterization with only minor exceedances of RRUSCOs;
- A total of 5 samples have been analyzed for total metals which makes up approximately 16% of the CP-51 recommended number of composite samples. In addition, a total of 15 samples have been analyzed for TCLP metals. Metals have not been detected at levels that would quantify as hazardous. The 5 composite samples showed uniform concentrations of total metals and support an increased volume per sample.
- A total of 5 samples have been analyzed for pesticides and PCBs which makes up approximately 16% of the CP-51 recommended number of samples. Pesticides and PCBs have not been identified as a contaminant of concern in the spoils to date. Existing data has documented pesticide and PCB concentrations in the spoils are below RRUSCOs and SWCLs.

2.2.1 Proposed Sampling Grids

In order to assure that the samples collected are representative from the entire dredge spoil stockpile aerially and vertically, PWGC proposes to divide the pile into five segments. Three borings will be installed in each segment. Elevations will be established for each soil boring location so that the depth from the top of the stockpile to the land surface can be determined. Once the elevations are determined, the segments will be divided into four depth intervals that coincide with equal elevations. This will result in a total of 20 independent vertical sampling locations within the dredge spoil stockpile representative of approximately 1,500 cubic yards.

The samples from each vertical sampling location will be composited and analyzed to describe its quality which conforms to the recommendations in the table from CP-51, above. In addition, this sampling/analysis plan will also produce separate results for the lowest horizon, which may be able to indicate if the bottom of the spoil pile has comingled with the residual soil, and if so, if this layer suitable for reuse. The sample grid pattern is shown in **Figure 4**.

2.2.2 Soil Boring Protocol

Prior to performing soil borings, 10-mil polyethylene sheeting, sufficiently large to hold the anticipated number of soil cores will be laid on the ground near where the boring will be installed.

Soil borings will be installed utilizing a Geoprobe® direct-push drill rig outfitted with a dual-core sampler or

closed piston sampler and dedicated acetate liners. Three soil borings will be installed in each segment from the top of the stockpile to land surface grade. Each soil core will be characterized and screened for the following:

- Visual signs of staining or discoloration
- Volatile organic vapors utilizing a PID

A log of each boring including classification of spoils, screening results, and photographs of each core will be recorded at each location.

2.2.3 Sampling Protocol

In order to characterize the entire stockpile in accordance with the modified CP-51 approach detailed above (one sample per every 1,500 cubic yards), the following sampling protocol is proposed.

A VOC grab sample will be collected directly from the acetate liner from each location utilizing terra-core sampling devices for a total of 20 grab samples. Sample intervals will be biased towards the interval with the highest PID response at each location. In the event there is no PID response, the sample interval will be chosen at random.

A three point composite sample will be collected from each location for a total of 20 composite samples from the entire dredge spoil stockpile. The sample aliquots from each location will be homogenized in a stainless steel bowl and the sample collected. Samples will be submitted to a New York State Department of Health Services (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified laboratory and analyzed for the following:

- VOCs by USEPA Method 8260
- SVOCs by USEPA Method 8270
- Pesticides/PCBs by USEPA Method 8081/8082
- TAL Metals by USEPA Method 6010/7471

2.2.4 Quality Assurance/Quality Control Procedures

Quality Assurance/Quality (QA/QC) procedures will be used to provide performance information with regard to accuracy, precision, sensitivity, representation, completeness, and comparability associated with the sampling and analysis for this investigation. Field QA/QC procedures will be used to document that samples are representative of actual conditions at the Site and identify possible cross-contamination from field

activities or sample transit. Laboratory QA/QC procedures and analyses will be used to demonstrate whether analytical results have been biased either by interfering compounds in the sample matrix, or by laboratory techniques that may have introduced systematic or random errors to the analytical process. PWGC proposes to analyze a laboratory prepared trip blank and collect a blind duplicate spoil sample and equipment blank at a frequency of one per 20 and evaluate the laboratory QA/QC data including laboratory method blanks to determine laboratory sampling precision.

3.0 REPORTING

Following the receipt of laboratory analytical reports, a report will be prepared to characterize the current spoils quality aerially and vertically. The data will be compared to that of previous collected data to see if the quality of the spoils has changed. It will also include the methods and findings of the activities performed as outlined in this work plan.

4.0 COMMUNITY AIR MONITORING / HEALTH AND SAFETY

During soil sampling, the onsite environmental representative will act as the health and safety officer and follow the procedures established during previous phases of work:

- Document that project personnel are familiar with the project specific health and safety requirements;
- Conduct daily tailgate safety meetings;
- Monitor samples and site perimeters for organic vapors using a PID; and
- Conduct periodic dust monitoring using a DustTrak 8520 aerosol dust monitor (or equivalent).

5.0 REFERENCES

D&B, Petition for Beneficial Use Determination – Glen Cove Creek Sediment Reuse Project; January 28, 2008.

NYSDEC, Division of Environmental Restoration, 6 NYCRR Part 375 Subpart 6, Remedial Program Soil Cleanup Objectives; December 14, 2006.

NYSDEC, Division of Environmental Remediation, CP-51 / Soil Cleanup Guidance; October 21, 2010.

PWGC, Pre-Construction Confirmatory / Insurance Data Gap Subsurface Investigation Report; May 19, 2014.

SEC, Li Tungsten FSSR – Site Preparation Activities; July 14, 2014.

USACE, Final Remedial Action Report, Li Tungsten Superfund Site Operable Unit 4 – Glen Cove Creek; October 2007.

USEPA, Record of Decision – Li Tungsten Corporation Superfund Site Operable Unit Four – Glen Cove Creek; March 30, 2005.

USEPA, Title 4- - Protection of Environment, Chapter 1 – Environmental Protection Agency (Continued), Subchapter I – Solid Wastes (Continued), Part 261 – Identification and Listing of Hazardous Waste, Subpart C – Characteristics of Hazardous Waste; January 7, 2012.

FIGURES



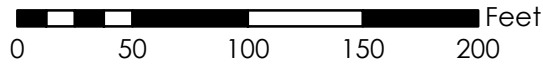
GARVIES POINT RD

HERB HILL RD

DREDGE SPOILS

STANDING WATER

DREDGE SPOILS



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Date:	9/16/2015	Drawn by:	JCG
Scale:	AS SHOWN	Approved by:	DE

Approximate Location of
Dredge Spoils After 2007
Remediation and Before
2014 FSS
GLEN ISLE

FIGURE NO:

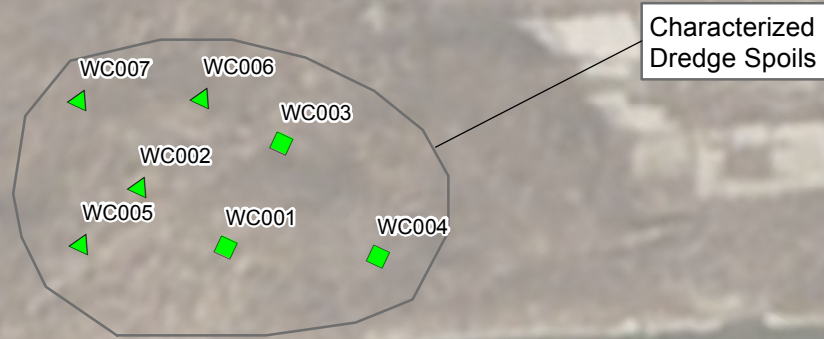
1

SHEET:



HERB HILL RD

GARVIES POINT RD



- Composite WC008
- ▲ Composite WC009

- Backfilled Excavation
- Open Excavation



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Date:	9/16/2015	Drawn by:	JCG
Scale:	AS SHOWN	Approved by:	DE

**DREDGE SPOILS WASTE
CHARACTERIZATION
SAMPLES (10/1/2014)
GLEN ISLE**

FIGURE NO:
2

SHEET:



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**DREDGE SPOILS WASTE
CHARACTERIZATION
SAMPLE LOCATIONS**
3/25/2015
GLEN ISLE

FIGURE NO:

3

SHEET:

HERB HILL RD

GARVIES POINT RD

WC033

WC035

WC034

- ⊕ Waste Characterization Sample Locations
- Property Boundary
- Dredge Spoil Area
- Curbline

0 50 100 150 200 Feet

Document Path: G:\Projects\W-R\RG11508\mapfiles\FIG3 D3 WC Sample Loc. 2015-03-15.mxd



PWGC

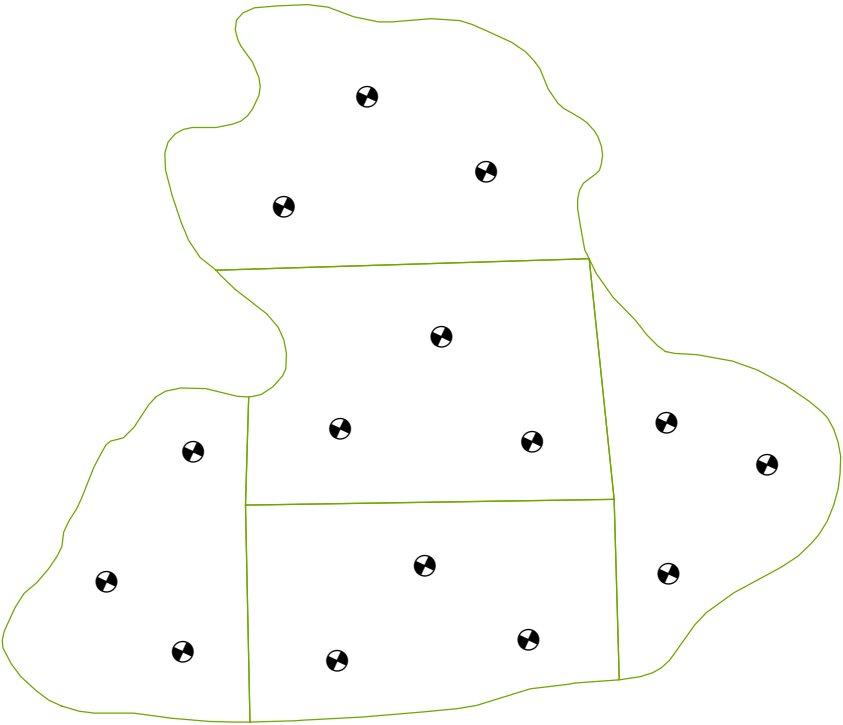
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HERB HILL RD

GARVIES POINT RD



- Proposed Waste Characterization Sample Locations
- Property Boundary
- Proposed Waste Characterization Grid
- Curblines

0 50 100 150 200 Feet

UNAUTHORIZED ALTERATION OR ADDITION TO THIS
DRAWING AND RELATED DOCUMENTS IS A VIOLATION
OF SEC. 7209 OF THE N.Y.S. EDUCATION LAW

DRAWING PREPARED FOR:

REVISION	DATE	INITIAL	COMMENTS
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DRAWING INFORMATION:			
Project:	RG11508	Designed by:	DE
Date:	9/28/2015	Drawn by:	JCG
Scale:	AS SHOWN	Approved by:	DE

**PROPOSED
SAMPLING GRID**

GLEN ISLE

FIGURE NO:
4

SHEET:

TABLES

Table 2
Dredge Spoil Sample Analytical Data Summary
Semi-Volatile Organic Compounds
EPA Method 8270

Litungen Site

Client Sample ID:	NYSDEC ⁽¹⁾	BUD-GRID-1	BUD-GRID-2	BUD-GRID-3	BUD-GRID-4	BUD-GRID-5	BUD-GRID-6	BUD-GRID-7	BUD-GRID-8	BUD-GRID-9	BUD-GRID-10	BUD-GRID-11	BUD-GRID-12	BUD-GRID-13	BUD-GRID-14	BUD-GRID-15	WC008	WC009	WC033	WC034	WC035
Laboratory ID:	Restricted-Residential																1410011-8	1410011-9	480-77261-1	480-77261-2	480-77361-3
Sampling Date:	Use SCOs	7/26/2007	7/26/2007	7/25/2007	7/25/2007	7/25/2007	7/26/2007	7/26/2007	7/26/2007	7/26/2007	7/26/2007	7/25/2007	7/25/2007	7/25/2007	7/26/2007	7/26/2007	10/1/2014	10/1/2014	3/25/2015	3/25/2015	3/25/2015
Semi-Volatile Organic Compounds																					
1,1-Biphenyl	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	300 U	300 U	310 U
2,2-oxybis (1-Chlorophenol)	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-
1,2,4-Trichlorobenzene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	43.1 U	43.9 U	-	-	-
1,2-Dichlorobenzene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	34.9 U	35.6 U	-	-	-
1,2-Diphenylhydrazine	NS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39.5 U	40.2 U	-	-	-
1,3-Dichlorobenzene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	35.2 U	35.9 U	-	-	-
1,4-Dichlorobenzene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	31.3 U	31.9 U	-	-	-
2,3,4,6-Tetrachlorophenol	NS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	39.6 U	40.3 U	-	-	-
2,4,5-Trichlorophenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	16.5 U	16.8 U	550 U	550 U	580 U
2,4,6-Trichlorophenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	32.6 U	33.2 U	410 U	410 U	430 U
2,4-Dichlorophenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	32.9 U	33.6 U	210 U	220 U	230 U
2,4-Dimethylphenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	35.3 U	36 U	490 U	490 U	510 U
2,4-Dinitrophenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,090 U	1,110 U	9,400 U	9,400 U	9,800 U
2,4-Dinitrotoluene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	35.6 U	36.2 U	420 U	420 U	440 U
2,6-Dinitrotoluene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	31.8 U	32.4 U	240 U	240 U	250 U
2-Chloronaphthalene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	32.3 U	32.9 U	330 U	340 U	350 U
2-Chlorophenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	41.4 U	42.2 U	370 U	370 U	390 U
2-Methylnaphthalene	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	140 J	ND	48 J	ND	ND	34.0 U	34.7 U	410 U	410 U	430 U
2-Methylphenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	31.5 U	32.1 U	240 U	240 U	250 U
2-Nitroaniline	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14.3 U	14.6 U	300 U	300 U	310 U
2-Nitrophenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	14.4 U	14.7 U	570 U	580 U	600 U
3,3'-Dichlorobenzidine	NS	330 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	69.1 U	70.4 U	2,400 U	2,400 U	2,500 U
3-Nitroaniline	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	53.0 U	54 U	560 U	560 U	590 U
4,6-Dinitro-o-cresol ^f	100,000 ^g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	86.8 U	88.4 U	2,000 U	2,000 U	2,100 U
4-Bromophenyl phenyl ether	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	31.3 U	31.9 U	290 U	290 U	300 U
4-Chloro-3-methylphenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	31.4 U	32 U	500 U	500 U	530 U
4-Chloroaniline	NS	62 J	48 J	ND	ND	ND	54 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	47.1 U	48 U	500 U	500 U	530 U
4-Chlorophenyl phenyl ether	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	23.2 U	23.7 U	250 U	250 U	260 U
4-Methylphenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	64 J	ND	ND	35.9 U	36.6 U	240 U	240 U	250 U
4-Nitroaniline	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	41.8 U	42.6 U	1,100 U	1,100 U	1,100 U
4-Nitrophenol	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	41.4 U	42.2 U	1,400 U	1,400 U	1,500 U
Acenaphthene	100,000 ^g	ND	110 J	82 J	84 J	73 J	ND	ND	68 J	89 J	79 J	230 J	69 J	140 J	130 J	ND	28.0 U	28.6 U	300 U	300 U	310 U
Acenaphthylene ^f	100,000 ^g	48 J	87 J	120 J	70 J	72 J	63 J	60 J	69 J	90 J	90 J	100 J	110 J	120 J	62 J	74 J	31.8 U	32.4 U	260 U	260 U	280 U
Acetophenone	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	270 U	280 U	290 U
Aniline	NS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35.1 U	35.8 U	-	-	-
Anthracene ^f	100,000 ^g	110 J	260 J	240 J	180 J	170 J	110 J	110 J	180 J	190 J	210 J	730	210 J	280 J	280 J	140 J	52.3 J	39.6 U	500 U	500 U	590 J
Atrazine	NS	ND	ND	56 J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	700 U	710 U	740 U
Benaldine	NS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	925 U	942 U	-	-	-
Benzaldehyde	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	1,600 U	1,600 U	1,700 U
Benzo(a)anthracene ^f	1,000 ^f	430	830	890	750	660	340 J	420 J	550	640	800	1,300	780	1,100	710	600	183 J	170 J	200 U	710 J	1,400 J
Benzo(a)pyrene	1,000 ^f	250 J	790	900	740	600	370 J	420 J	550	670	760	1,000	860	1,000	660	620	315 J	301 J	460 J	730 J	1,400 J
Benzo(b)fluoranthene ^f	1,000 ^f	190 J	1,200	1,400	1,100	850	560	480	750	980	1,000 U	1,400	1,300	1,400	970	930	273 J	267 J	510 J	1,200 J	1,800 J
Benzo(ghi)perylene ^f	100,000 ^g	ND	590	680	570	440	310 J	320 J	420 J	480 J	ND	650	680	750	500	460	242 J	262 J	290 J	460 J	720 J
Benzo(k)fluoranthene ^f	3,900	380 J	340 J	360 J	350 J	320 J	180 J	250 J	270 J	370 J	520	500	370 J	540	300 J	270 J	275 J	243 J	320 J	550 J	770 J
Benzoic acid	NS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12,500 U	12,800 U	-	-	-
Benzyl alcohol	NS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	29.4 U	30 U	-	-	-
Bis(2-chloroisopropyl)ether	NS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41.3 U	42.1 U	410 U	410 U	430 U
Bis(2-chloroethoxy)methane	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	39.4 U	40.1 U	430 U	430 U	450 U
Bis(2-chloroethyl)ether	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	33.9 U	34.6 U	260 U	260 U	280 U
Bis(2-Ethylhexyl)phthalate	NS	ND	4,200	1,900	1,500	1,500	4,600	1,400	1,900	3,800	1,500	2,700	2,200	2,100	2,500	1,200	325 J	444 J	1,300 J B	1,900 J B	4,600 B
Butyl benzyl phthalate	NS	ND	48 J	84 J	120 J	54 J	ND	ND	ND	ND	ND	54 J	70 J	980	66 J	ND	56.1 U	57.1 U	330 U	340 U	350 U
Caprolactum	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	610 U	610 U	640 U
Carbazole	NS	ND	100 J	75 J	62 J	68 J	ND	ND	51 J	60 J	70 J	280 J	80 J	120 J	93 J	53 J	62.8 U	64 U	240		

Table 3
Dredge Spoil Sample Analytical Data Summary
TCLP RCRA 8 Metals
EPA Method 6010

LiTungsten Site

Client Sample ID:	USEPA ⁽¹⁾	BUD-GRID-1	BUD-GRID-2	BUD-GRID-3	BUD-GRID-4	BUD-GRID-5
Laboratory ID:	HAZ WASTE REGULATORY					
Sampling Date:	LEVEL	7/26/2007	7/26/2007	7/25/2007	7/25/2007	7/25/2007
Total Metals (mg/kg)						
Arsenic	5	.0104 B	.0131 B	.0252	.0123 B	.015 B
Barium	100	.107 B	.161 B	.120 B	.137 B	.149 B
Cadmium	1	.110	.121	.08	.0803	.0904
Chromium (III)	5	.0005 B	.0009 B	.0012 B	ND	.00096 B
Lead	5	.0256	.0573	.189	.165	.211
Mercury	0.2	ND	.00008 B	.00005 B	ND	.00009 B
Selenium	1	ND	ND	.011 B	.0062 B	.0154 B
Silver	5	.0318	.0264 B	.0109 B	.0134 B	.0121 B
Client Sample ID:	USEPA ⁽¹⁾	BUD-GRID-6	BUD-GRID-7	BUD-GRID-8	BUD-GRID-9	BUD-GRID-10
Laboratory ID:	HAZ WASTE REGULATORY					
Sampling Date:	LEVEL	7/26/2007	7/26/2007	7/26/2007	7/26/2007	7/26/2007
Total Metals (mg/kg)						
Arsenic	5	.0211	.0462	.0425	.0274	.0138 B
Barium	100	.0794 B	.0816 B	.105 B	.119 B	.160 B
Cadmium	1	.0916	.0654	.0541	.0613	.0894
Chromium (III)	5	.0015 B	ND	.001 B	.0008 B	ND
Lead	5	.0972	.127	.195	.173	.177
Mercury	0.2	.00005 B	.00007 B	.00009 B	ND	ND
Selenium	1	.004 B	.0066 B	.0099 B	.0174 B	.0131 B
Silver	5	.0186 B	.0163 B	.0047 B	.0061 B	.014 B
Client Sample ID:	USEPA ⁽¹⁾	BUD-GRID-11	BUD-GRID-12	BUD-GRID-13	BUD-GRID-14	BUD-GRID-15
Laboratory ID:	HAZ WASTE REGULATORY					
Sampling Date:	LEVEL	7/25/2007	7/25/2007	7/25/2007	7/26/2007	7/26/2007
Total Metals (mg/kg)						
Arsenic	5	.0172 B	.0135 B	.0128 B	.0089 B	.0092 B
Barium	100	.0878 B	.127 B	.0964 B	.134 B	.164 B
Cadmium	1	.0996	.0841	.064	.0554	.0643
Chromium (III)	5	.0016 B	.0006 B	.0005 B	ND	.0006 B
Lead	5	.127	.163	.100	.108	.105
Mercury	0.2	ND	ND	.00009 B	ND	ND
Selenium	1	.0096 B	.0086 B	.0086 B	.007 B	.0053 B
Silver	5	.015 B	.014 B	.0158 B	.0181 B	.0155 B

Notes:

(1) USEPA Hazardous Waste Regulatory Level for Target Compound List Priority Metals by Method 6010/7470/7471, Table 13B 2000

ND - Not detected

B - Concentration is greater than instrument detection limit (IDL) and less than contract required detection limit (CRDL).

Highlighted text denotes concentrations exceeding USEPA HWRL

Table 4
Soil Sample Analytical Data Summary
Total Metals
EPA Method 6010

LiTungsten Site

Client Sample ID:	NYSDEC ⁽²⁾	WC008	WC009	WC033	WC034	WC035
Laboratory ID:	Restricted-Residential	1410011-8	1410011-9	480-77261-1	480-77261-2	480-77361-3
Sampling Date:	Use SCOs	10/1/2014	10/1/2014	3/25/2015	3/25/2015	3/25/2015
Total Metals (mg/kg)						
Aluminum, Total	NS	2,790	2,860	7,220	6,450	8,210
Antimony, Total	NS	3.99	4.46	3.4 J	3.2 J	2.7 J
Arsenic, Total	24*	14.9	16.4	17.2	16.6	23.6
Barium, Total	400	24.8	26.0	56.8	49.7	48.7
Beryllium, Total	72	0.052 U	0.052 U	0.42 J	0.44 J	0.43 J
Cadmium, Total	4.3	3.43	4.04	4.8	5.2	7.80
Calcium, Total	NS	8,140	4,810	6,180	5,410	7,540
Chromium, Total ^e	180	19.5	20.9	32.8	33.5	34.0
Cobalt, Total	NS	7.15	8.22	11.3	12.1	17.1
Copper, Total	270	111	122	158	170	204
Iron, Total	NS	11,000	11,700	12,500	11,900	20,500
Lead, Total	400	86.8	101	153	163	178
Magnesium, Total	NS	1,490	2,010	3,660	2,740	3,830
Manganese, Total	2,000 ^f	120	119	171	153	223
Nickel, Total	310	11.2	12.3	21.3 J	20.9 J	26.3 J
Potassium, Total	NS	676	748	1,250	964	1,090
Selenium, Total	180	0.33 U	0.33 U	2.5 J	2.8 J	3.3 J
Silver, Total	180	15.5	17.5	22.5	26.5	29.7
Sodium, Total	NS	336	308	750 J	864 J	1,150
Thallium, Total	NS	0.26 U	0.26 U	0.38 U	0.38 U	0.37 U
Vanadium, Total	NS	14.3	15.0	23.4	22.0	34.7
Zinc, Total	10,000 ^d	76.2	98.1	138	182	199
Mercury, Total	0.81 ^l	0.67	0.63	0.26	0.30	0.33
Client Sample ID:	NYSDEC ⁽²⁾	WC008	WC009	WC033	WC034	WC035
Laboratory ID:	Restricted-Residential	1410011-8	1410011-9	480-77261-1	480-77261-2	480-77361-3
Sampling Date:	Use SCOs	10/1/2014	10/1/2014	3/25/2015	3/25/2015	3/25/2015
Organochlorine Pesticides (µg/kg)						
4,4'-DDD	13,000	6.21	5.28 J	63 J F1	45 J	38 J
4,4'-DDE	8,900	1.17 U	1.19 U	42 U	35 J	38 J
4,4'-DDT	7,900	0.59 U	0.60 U	46 U	60 J	25 U
Aldrin	97	1.15 U	1.17 U	49 U	25 U	26 U
Alpha-BHC	480	0.72 U	0.73 U	36 U	18 U	19 U
Alpha-Chlordane	4,200	13.1	11.2	99 U	50 U	52 U
Beta-BHC	360	0.59 U	0.60 U	36 U	18 U	19 U
Chlordane	NS	7.59 U	7.73 U	-	-	-
Delta-BHC ^g	100,000 ^a	1.23 U	1.26 U	96 J B F2	19 U	20 U
Dieldrin	200	8.54	8.62	48 U	27 J	29 J
Endosulfan I ^{d,f}	24,000 ^j	1.11 U	1.13 U	38 U	19 U	20 U
Endosulfan II ^{d,f}	24,000 ^j	0.88 U	0.90 U	36 U	18 U	19 U
Endosulfan sulfate ^{d,f}	24,000 ^j	0.79 U	0.80 U	37 J	19 U	20 U
Endrin	11,000	1.12 U	1.14 U	39 U	20 U	22 J
Endrin aldehyde	NS	0.82 U	0.83 U	51 U	26 U	27 U
Endrin ketone	NS	1.04 U	1.06 U	49 U	25 U	26 U
Gamma-BHC (Lindane)	1,300	0.91 U	0.92 U	36 U F2	19 U	19 U
Gamma-Chlordane	NS	11.7	10.2	63 U	32 U	33 U
Heptachlor	2,100	1.01 U	1.03 U	43 U	22 U	23 U
Heptachlor epoxide	NS	1.08 U	1.10 U	51 U	26 U	27 U
Methoxychlor	NS	0.96 U	0.98 U	41 U	25 J	26 J
Toxaphene	NS	40 U	40.6 U	1,200 U	590 U	610 U
Client Sample ID:	NYSDEC ⁽²⁾	WC008	WC009	WC033	WC034	WC035
Laboratory ID:	Restricted-Residential	1410011-8	1410011-9	480-77261-1	480-77261-2	480-77361-3
Sampling Date:	Use SCOs	10/1/2014	10/1/2014	3/25/2015	3/25/2015	3/25/2015
Polychlorinated Biphenyls (µg/kg)						
Aroclor 1016	10,000	17.3 U	17.7 U	48 U	53 U	55 U
Aroclor 1221	10,000	17.3 U	17.7 U	48 U	53 U	55 U
Aroclor 1232	10,000	17.3 U	17.7 U	48 U	53 U	55 U
Aroclor 1242	10,000	17.3 U	17.7 U	48 U	53 U	55 U
Aroclor 1248	10,000	17.3 U	17.7 U	48 U	53 U	55 U
Aroclor 1254	10,000	341	308	320	370	650
Aroclor 1260	10,000	12.1 U	12.3 U	120 J	170 J	270 J
Aroclor 1262	10,000	12.1 U	12.3 U	-	-	-
Aroclor 1268	10,000	12.1 U	12.3 U	-	-	-

Notes:

(1) NYSDEC 6 NYCRR Environmental Remediation Programs Part 375 Restrcted Use of Soil Cleanup Objective Table 375-6.8b 12/06

a - The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm. See TSD section 9.3.

d - The SCOs for metals were capped at a maximum value of 10,000 ppm. See TSD section 9.3.

e - The SCO for this specific compound (or family of compounds) is considered to be met if the analysis for the total species of this contaminant is below the specific SCO.

f - For constituents where the calculated SCO was lower than the rural soil background concentration, as determined by the department and department of health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.

g - This SCO is derived from data on mixed isomers of BHC.

i - This SCO is for the sum of Endosulfan I, endosulfan II, and endosulfan sulfate.

j - This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts). See TSD Table 5.6-1.

* Site Specific Cleanup Objective

NS - No Standard

B - Compound was found in the blank and sample.

J - Data are flagged (J) when a QC analysis fails outside the primary acceptance limits. The qualified "J" data are not excluded from further review or consideration. However, only one flag (J) is applied to a sample result, even though several associated QC analyses may fail. The "I" data may be biased high or low or the direction of the bias may be indeterminable

U - The analyte was analyzed for, but due to blank contamination was flagged as non-detect (U). The result is usable as nondetect.

F1 - MS and/or MSD Recovery exceeds the control limits

F2 - MS/MSD Relative Percent Difference (RPD) exceeds control limits

Highlighted text denotes concentrations exceeding NYSDEC Restricted-Residential Use SCO